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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,231	05/07/2001	Peter Krulevitch	IL-10581	3998

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EXAMINER
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SIMONE, CATHERINE A

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 04/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

09/851,231

Applicant(s)

KRULEVITCH ET AL.

Examiner

Catherine Simone

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 11, 13-15, 17 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Cammack et al. (US 5,574,327).

Regarding claims 11 and 17, Cammack et al. discloses an apparatus having a sealed open microchannel therein comprising an etched open substrate (Fig. 1, element 14), an etched open microchannel in the etched substrate (Fig. 1, element 20), an annealed substrate (Fig. 1, element 12) positioned on the etched substrate that covers the etched microchannel in the etched substrate, an annealed open microchannel (Fig. 1, element 22) in the annealed substrate over the etched microchannel in the etched substrate, and a bond (Fig. 1, element 16) connecting the etched substrate to the annealed substrate (see col. 6, lines 33-36), wherein the etched open microchannel and the annealed open microchannel comprise the sealed open microchannel (Fig. 1, element 18). Regarding claims 13 and 19, the etched microchannel in the etched substrate and the microchannel in the annealed substrate form a circular microchannel (Fig. 1, element 18; also see col. 5, lines 53-60). Regarding claim 14, the etched substrate and the annealed substrate consist of glass (see col. 5, line 67). Regarding claim 15, the bond comprises fusion or anodic bonding (see col. 6, lines 34-36).

Furthermore, in regard to claim 17, the limitation “produced by the method.....produced by annealing said annealed substrate...” is a method of production and therefore does not determine the patentability of the product itself. Process limitations are given little or no patentable weight. The method of forming the product is not germane to the issue of patentability of the product itself. MPEP 2113.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 12, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cammack et al. (US 5,574,327).

Cammack et al. discloses an apparatus having a sealed open microchannel therein comprising an etched open substrate (Fig. 1, element 14), an etched open microchannel in the etched substrate (Fig. 1, element 20), an annealed substrate (Fig. 1, element 12) positioned on the etched substrate that covers the etched microchannel in the etched substrate, an annealed open microchannel (Fig. 1, element 22) in the annealed substrate over the etched microchannel in the etched substrate, and a bond (Fig. 1, element 16) connecting the etched substrate to the annealed substrate (see col. 6, lines 33-36), wherein the etched open microchannel and the annealed open microchannel comprise the sealed open microchannel (Fig. 1, element 18). Although Cammack et al. discloses an annealing temperature of 1000°C (see col. 2, lines 21-23) and a diameter of

<100 micron for the sealed microchannels (see col. 2, line 57), Cammack et al. fails to disclose an annealing temperature in the range of 600° to 800° and the microchannel having a depth of about 10 µm and a width of about 20 µm. Therefore, the optimum ranges for the annealing temperature and the width and depth of the microchannel would be readily determined through routine experimentation by one having ordinary skill in the art depending on the desired end results. Thus, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have modified the annealing temperature in Cammack et al. to be in the 600° to 800° range and modified the microchannel in Cammack et al. to have a depth of about 10 µm and a width of about 20 µm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art in absence of showing unexpected results. *MPEP 2144.05 (II)*.

Furthermore, regarding claim 18, the limitation “produced by annealing” is a method of production and therefore does not determine the patentability of the product itself. Process limitations are given little or no patentable weight. The method of forming the product is not germane to the issue of patentability of the product itself. *MPEP 2113*.

### ***Response to Arguments***

5. Applicant's arguments filed 1/30/06 have been fully considered but they are not persuasive.

Applicants argue “the Cammack et al reference does not disclose Applicants annealed open microchannel claim element. The element 22 of the Cammack et al reference is described as “a half cavity 22” and this element is simply another etched microchannel”. However, it is to be pointed out that Cammack et al. clearly teaches an annealed open microchannel (Fig. 1,

Art Unit: 1772

element 22) in said annealed substrate (Fig. 1, element 12 and see col. 9, lines 44-49) over said etched microchannel (Fig. 1, element 20) in said etched substrate (Fig. 1, element 14 and see col. 6, lines 4-7) as recited in claim 11.

Furthermore, Applicants argue that “It is clear from the Cammack et al reference that “half-cavity 22” is not produced by annealing. The Cammack et al. reference states, “the two wafers are then annealed at high temperature (e.g., 1000 C.), resulting in a chemical bond at the interface, which has the strength of the bulk material. Even though the temperature is elevated, bonding takes place at a temperature below the melting point of the material (quartz: approximately 1400°C). This means that the substrate will not deform during the bonding process.” (col. 3, lines 21-28 of the Cammack et al reference). Since the Cammack et al substrate will not deform during the bonding process, the Cammack et al “half-cavity 22” is not produced by annealing”. However, it is to be pointed out that the recitation “produced by annealing” is a method of production and therefore does not determine the patentability of the product itself. Process limitations are given little or no patentable weight. The method of forming the product is not germane to the issue of patentability of the product itself. MPEP 2113. Cammack et al. clearly teaches two substrates (Fig. 1, elements 14 and 12) each having microchannels (Fig. 1, elements 20 and 22) being etched (see col. 6, lines 4-13) and then are annealed (see col. 9, lines 44-49). Therefore, Cammack et al. clearly teaches an annealed open microchannel in said annealed substrate over said etched microchannel in said etched substrate as recited in claim 11.

***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Catherine Simone whose telephone number is (571)272-1501. The examiner can normally be reached on 9:30-6:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on (571) 272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1772

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Catherine A. Simone  
Examiner  
Art Unit 1772  
April 5, 2006



HAROLD PYON  
SUPERVISORY PATENT EXAMINER  
1772 4/7/06